Express Mail No.: EL 979848912 US
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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.(currently amended) Limiter optics for an ignition feedback regenerative free electron laser amplifier having a pulsed output beam of predetermined duration from an undulator comprising:

A. A pickoff ~~means for~~ member adapted to directing a portion of the output of said pulsed output beam as a pickoff beam; and

B. a ~~focusing assembler~~ limiter assembly adapted to bringing said directed pickoff beam to a focus at a selected point within said undulator at a selected time.

2.(currently amended) Limiter optics as described in Claim 1 where said pickoff ~~means~~ member comprises a convex pickoff mirror ~~for~~ adapted to creating a pickoff beam and which expands said pickoff beam to a predetermined size.

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3.(currently amended) Limiter optics as described in Claim 1 where said ~~focusing assembly~~ limiter assembly further comprises:

A. An expander mirror ~~for~~ adapted to modifying spatial and temporal characteristics of said portion of the output picked off by said pickoff means;

B. a first focusing optics adapted to ~~focus~~ focusing said modified directed pickoff beam to a focal point;

C. a limiter plate movably placed near said focal point so as to ~~have~~ allow said focused modified directed pickoff beam to pass through said limiter plate;

D. adjusting ~~means~~ member operably connected to said limiter plate and adapted to move it closer to or farther from said focal point as desired; and

E. a second focusing optics placed after said pickoff beam has passed through said limiter plate and adapted to refocus said focused directed pickoff beam to a predetermined point in said ignition feedback regenerative free electron laser amplifier.

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4.(currently amended) Limiter optics as described in Claim 2 where said ~~focusing~~ limiter assembly further comprises:

A. An expander mirror ~~for~~ adapted to modifying spatial and temporal characteristics of said portion of the output picked off by said pickoff ~~means~~ member;

B. a first focusing optics adapted to focusing said modified directed pickoff beam to a focal point;

C. a limiter plate movably placed near said focal point so as to ~~have~~ allow said focused modified directed pickoff beam to pass through said limiter plate;

D. adjusting ~~means~~ member operably connected to said limiter plate and adapted to move it closer to or farther from said focal point as desired; and

E. a second focusing optics placed after said pickoff beam has passed through said limiter plate and adapted to refocus said focused directed pickoff beam to a predetermined point in said ignition feedback regenerative free electron laser amplifier.

5.(currently amended) Limiter optics as described in Claim 3 where said expander mirror comprises a half silvered mirror ~~which changes~~ adapted to change the pulse duration of the directed picked off portion of said pulsed output beam by a predetermined amount.

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6. (currently amended) Limiter optics as described in Claim 4 where said expander mirror comprises a half silvered mirror which is adapted to change ~~changes~~ the pulse duration of the directed picked off portion of said pulsed output beam by a predetermined amount.

7. (currently amended) Limiter optics as described in Claim 3 where said expander mirror comprises a phased mirror having at least one step ~~so as~~ adapted to increase the pulse duration of the directed picked off portion of said picked output beam.

8. (currently amended) Limiter optics as described in Claim 4 where said expander mirror comprises a phased mirror having at least one step ~~so as~~ adapted to increase the pulse duration of the directed picked off portion of said picked output beam.

9. (currently amended) Limiter optics as described in Claim 3 ~~further comprising a Cassegrainian arrangement for~~ wherein said first focusing optics comprises a Cassegrainian arrangement and said second focusing optics comprises a Cassegrainian arrangement ~~for said second focusing optics~~.

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10.(currently amended) Limiter optics as described in Claim 4 ~~further comprising a Cassegrainian arrangement for~~ wherein said first focusing optics comprises a Cassegrainian arrangement and said second focusing optics comprises a Cassegrainian arrangement ~~for said second focusing optics~~.

11.(currently amended) Limiter optics as described in Claim 5 ~~further comprising a Cassegrainian arrangement for~~ wherein said first focusing optics comprises a Cassegrainian arrangement and said second focusing optics comprises a Cassegrainian arrangement ~~for said second focusing optics~~.

12.(currently amended) Limiter optics as described in Claim 6 ~~further comprising a Cassegrainian arrangement for~~ wherein said first focusing optics comprises a Cassegrainian arrangement and said second focusing optics comprises a Cassegrainian arrangement ~~for said second focusing optics~~.

13.(currently amended) Limiter optics as described in Claim 7 ~~further comprising a Cassegrainian arrangement for~~ wherein said first focusing optics comprises a Cassegrainian arrangement and said second focusing optics comprises a Cassegrainian arrangement ~~for said second focusing optics.~~

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14.(currently amended) Limiter optics as described in Claim 8 ~~further comprising a Cassegrainian arrangement for~~ wherein said first focusing optics comprises a Cassegrainian arrangement and said second focusing optics comprises a Cassegrainian arrangement ~~for said second focusing optics~~.

15. Limiter optics as described in Claim 3 where said expander mirror comprises a phased mirror of striped mesas, said striped mesa being parallel to each other and having a preselected height.

16. Limiter optics as described in Claim 4 where said expander mirror comprises a phased mirror of striped mesas, said striped mesa being parallel to each other and having a preselected height.

17. Limiter optics as described in Claim 15 further comprising a Cassegrainian arrangement for said first focusing optics and a Cassegrainian arrangement for said second focusing optics.

18. Limiter optics as described in Claim 16 further comprising a Cassegrainian arrangement for said first focusing optics and a Cassegrainian arrangement for said second focusing optics.

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19.(currently amended) A method of extending the duration of an optical pulse comprising the steps of:

A. ~~Placing~~ placing a phased pickoff mirror with a plurality of predetermined mesas in the path of said optical pulse ~~for~~ whereby ~~creating~~ a plurality of parallel pulse beams are created from said optical pulse, each adjoining parallel pulse beam having a predetermined time lag from the other parallel beams;

B. transmitting said plurality of parallel pulse beams into an aperture of focusing optics such that all of said plurality of parallel pulse beams are focused to a predetermined location; and

C. providing refocusing optics optically arranged to refocus all light passing through said predetermined location to a second predetermined location such that said plurality of parallel pulsed beams ~~are now appearing~~ appear at the same desired location only separated in time.